

DECam Commissioning Update: Integration and Testing during Observations



All-Experimenter's Meeting

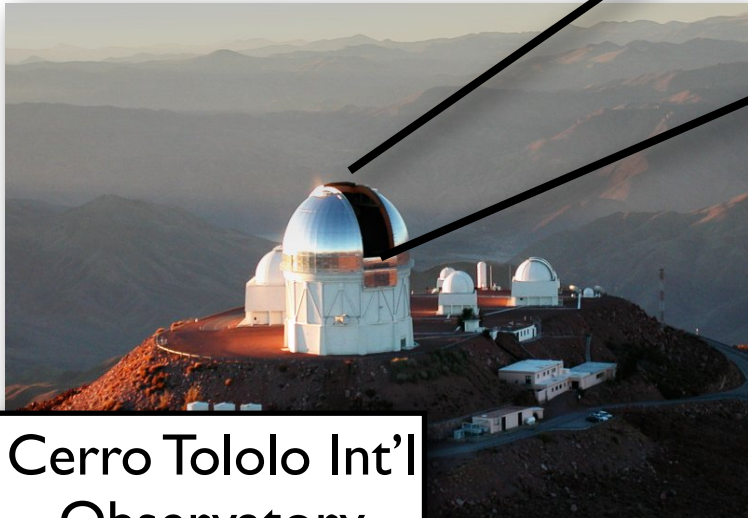
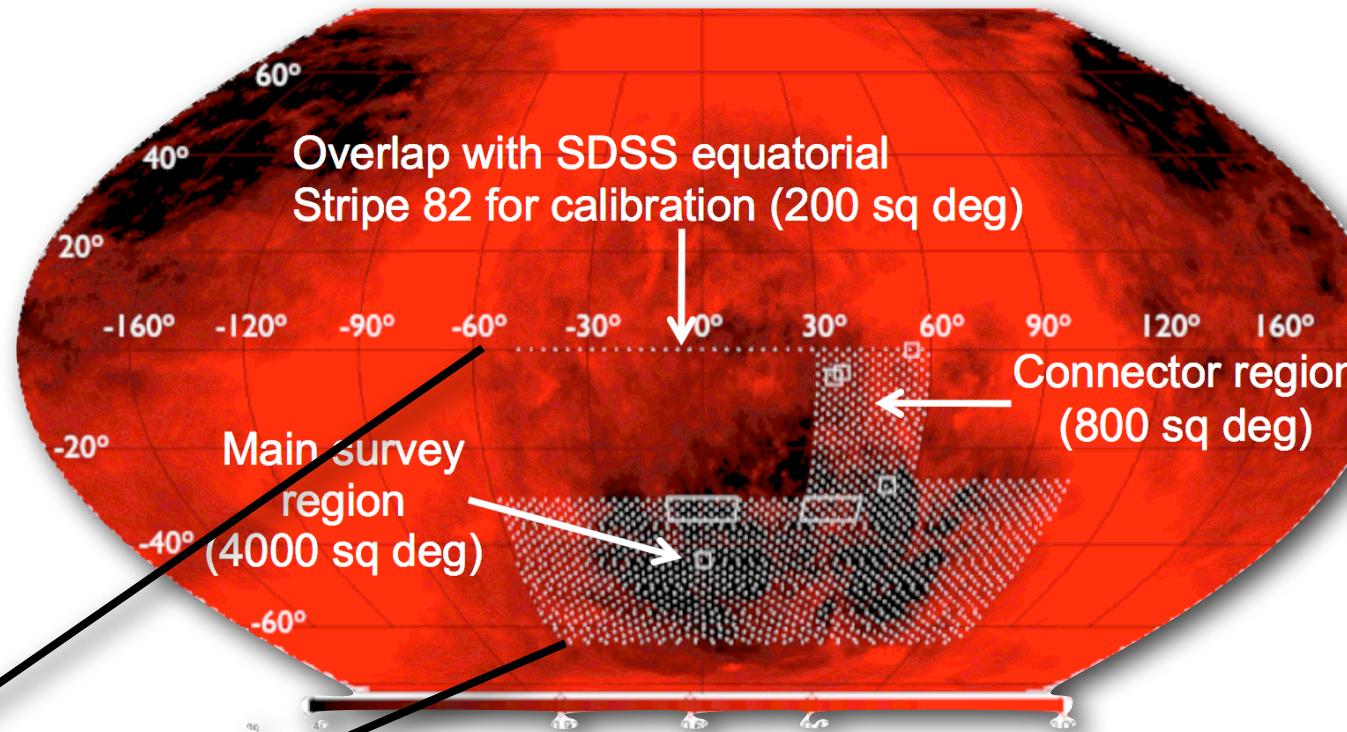
Brian Nord

11 / 5 / 12



DES: A Dark Mission

- Measure the time-dependence of Dark Energy ...
- ... with a 500-Mpixel camera and 3sq. deg field of view.

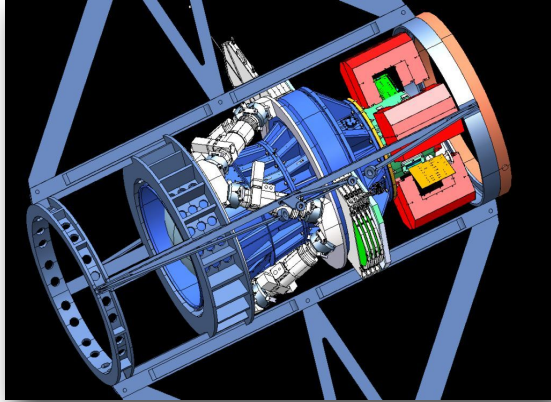


Cerro Tololo Int'l
Observatory

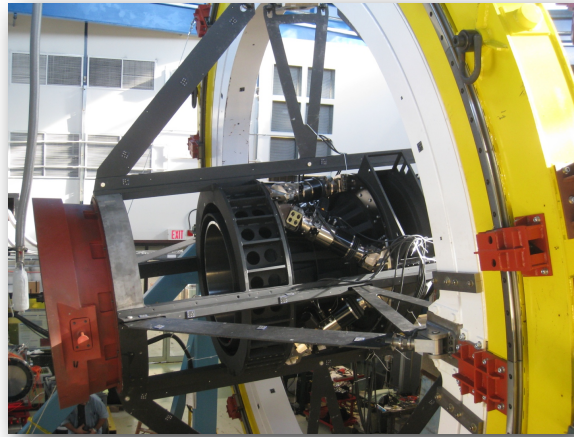
- ... via 5000-sq. deg. broadband imaging of galaxies and supernovae in the Southern Hemisphere ...
- ... over the course of 5 years on the Blanco 4m at CTIO.

Evolution of the Dark Energy Camera (DECam)

Design [2003]

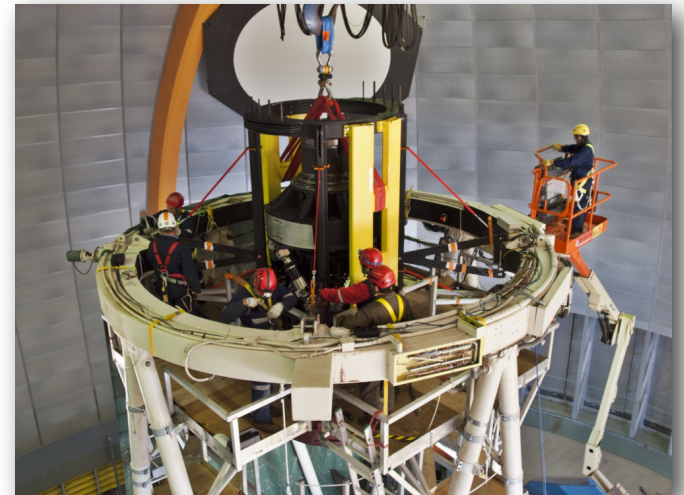


Testing [2010]



[Full-scale simulator at FNAL]

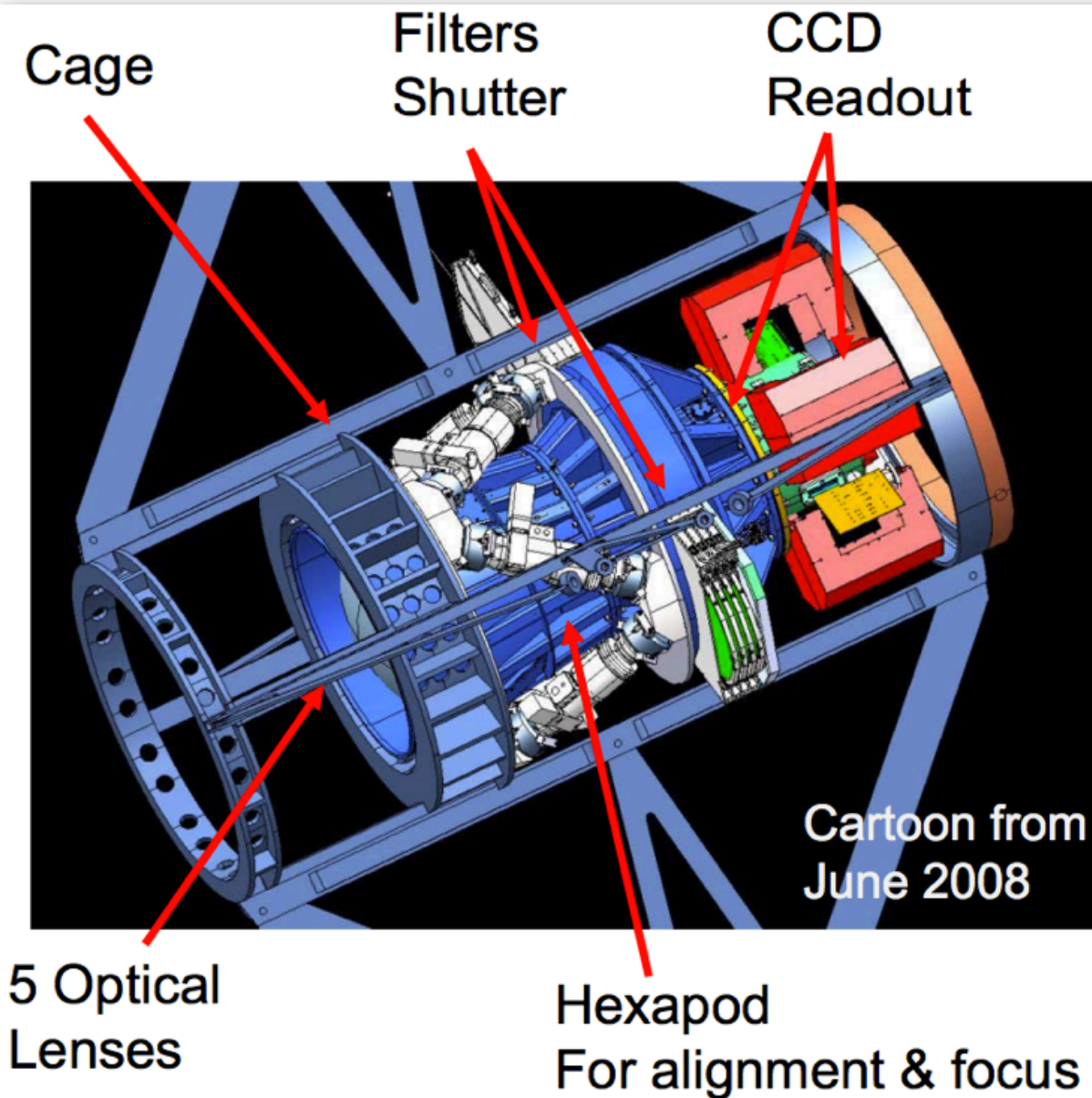
Installation [2012]



Recent Schedule



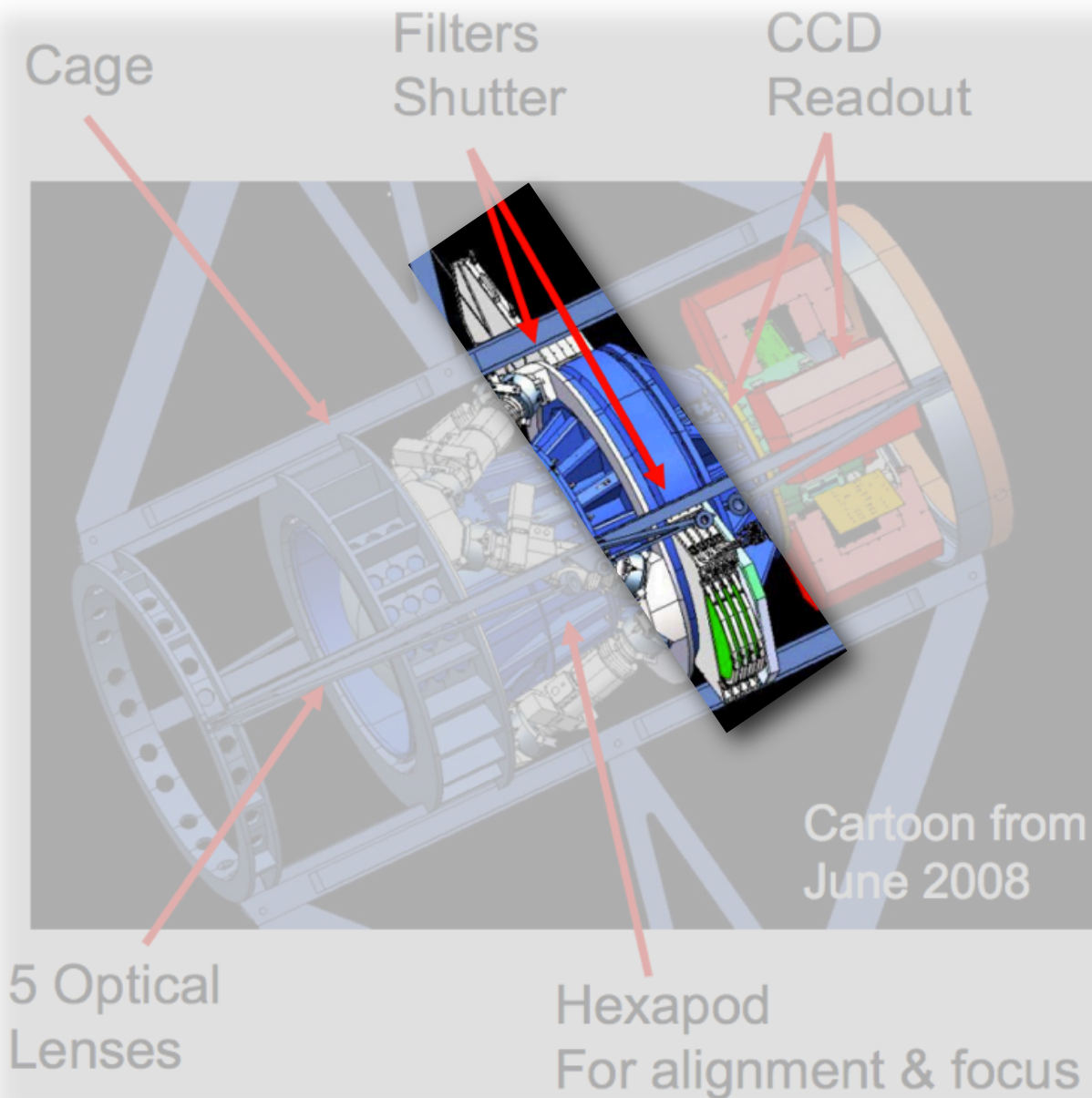
- September 12, 2012: **First Light!**
- September - October: Commissioning
 - Oct 9-16: Repairs (offline)
 - Oct 26 - Nov 1: Calibration (offline)
- November: Science Verification



Overview:

DECam Progress in October

- Focus on the Filter Changer Mechanism [Refurbishment]
- Running and training DECam Operations
- Address remaining issues component-by-component

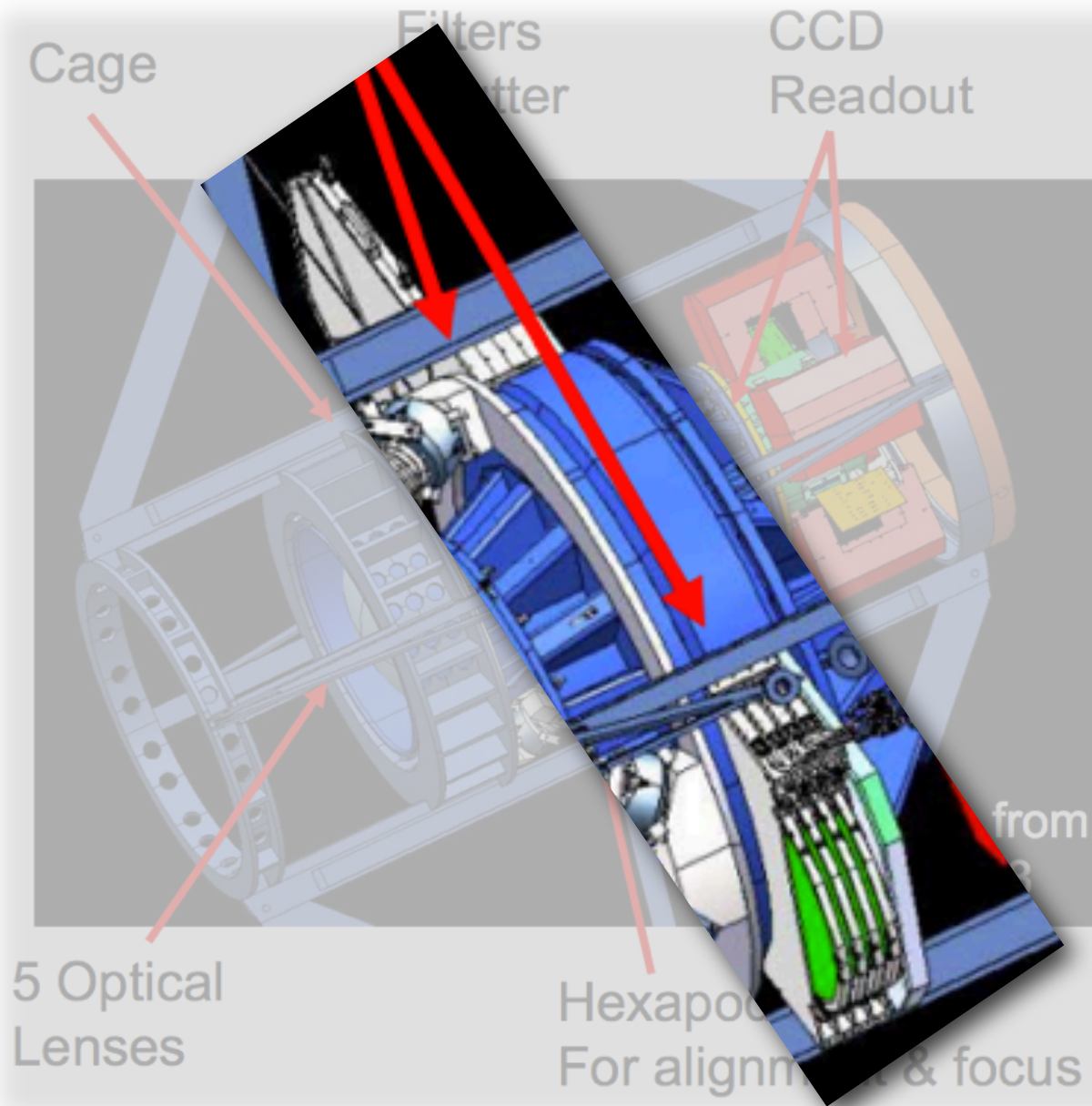


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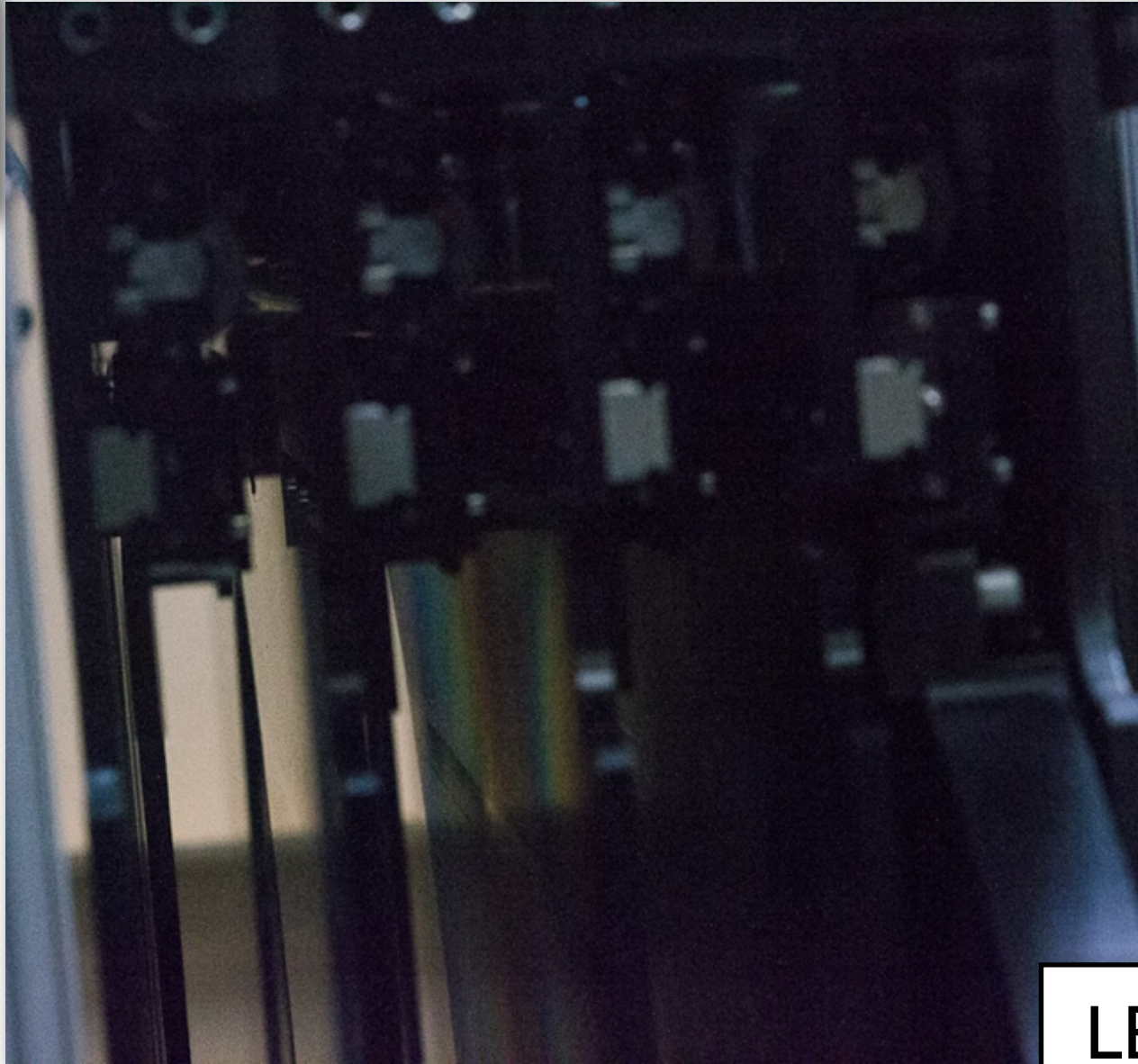
Filter Changer Repair Schedule



- 3 days: Remove filters and filter changer from cage.
- 4 days: Refurbish.
- 2 days: Insert filters and filter changer.

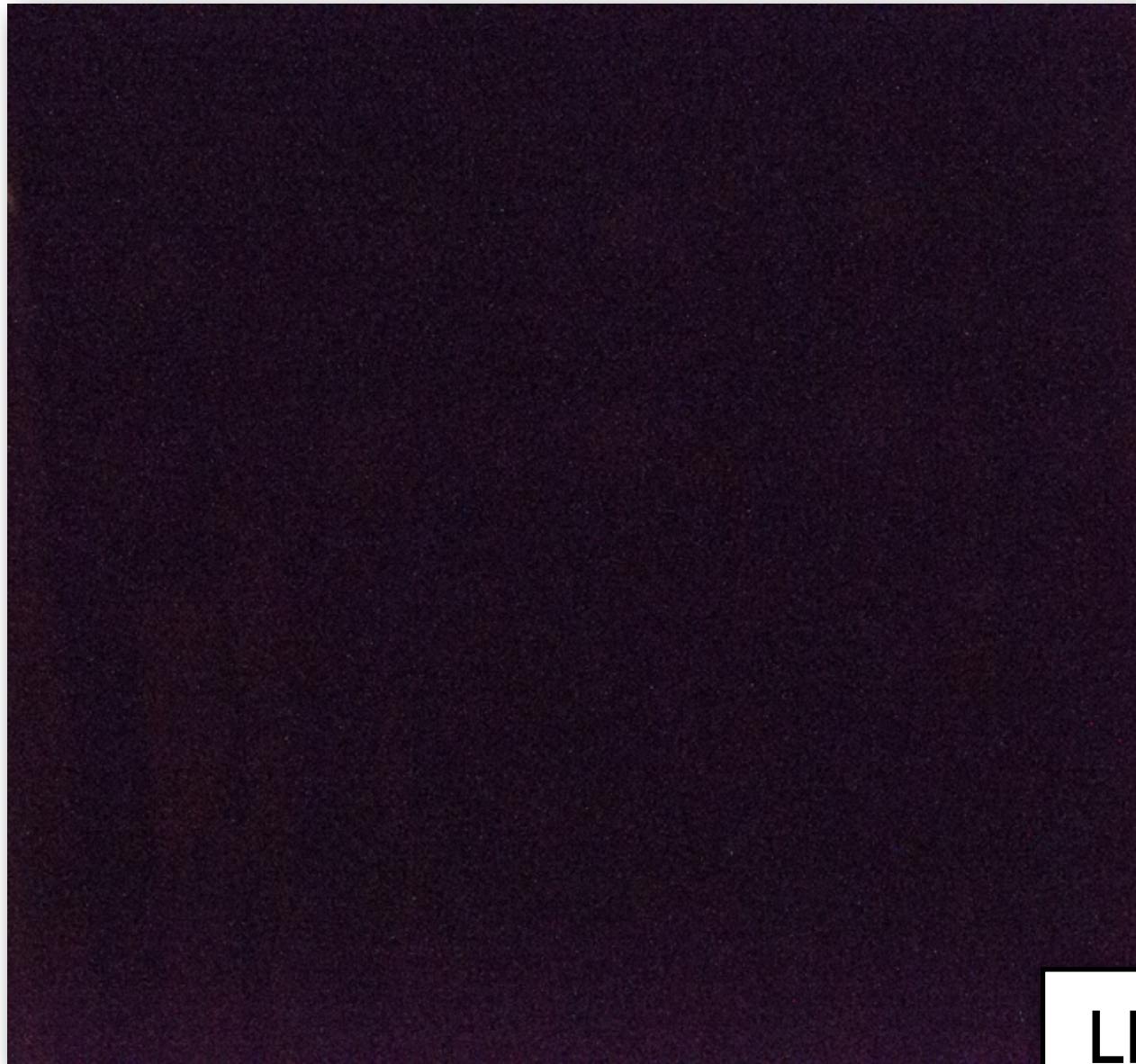
The Filter Changer Strikes Back

Side
View



LEDs off

The Filter Changer Strikes Back



LEDs off

The Filter Changer Strikes Back



LEDs on



Return to Commissioning

- LEDs deactivated safely.
- Filter Changer works better than before.



Return to Commissioning

- Learn the operating system.
- Train users/observers.
- Monitor and troubleshoot integrated operations.



A few **clouds**



9 days for FCM repair



5 days for DECal Ops



15 nights of
observations in
October



Ground Control



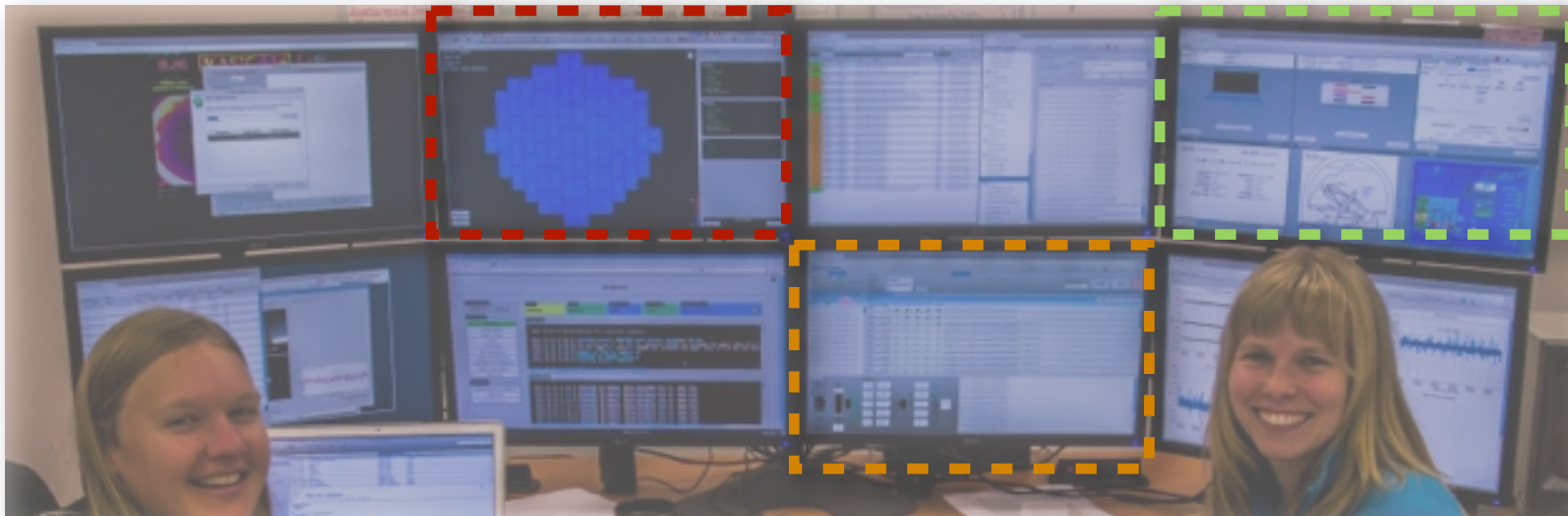
Survey **I**mage **S**ystem **P**rocess **I**ntegration

SISPI: the DECam *Whisperer*

Image
Health

Instrument
Control

“Comfort”
Monitor



Exposure
Control

Additional
Usual Suspects:

Annis, Neilsen, Tucker, Roodman
(SLAC), Fausti and da Costa (Brazil)

DECam Subsystem Status

- Focus Loop
- DECam Integration
- Seeing and Image Health
- Guiding
- Pointing/tracking (new TCS still commissioning)
- RASICAM (Radiometric All Sky Infrared Camera):
monitor cloud cover

Focus on Donuts

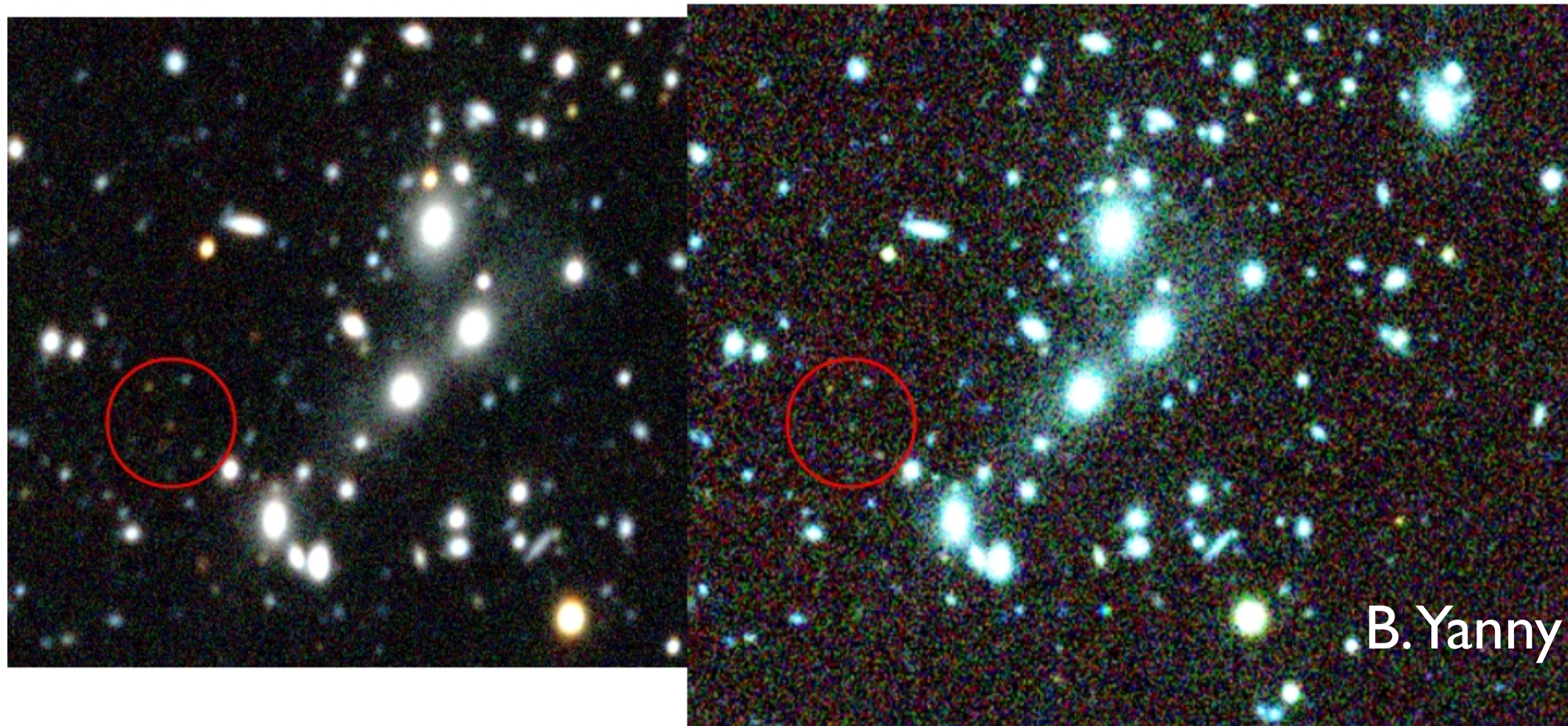


- 8 *focus* CCDs are out of plane
--- 4 above and 4 below the observation CCDs.
- Stars appear as “donuts” when out of focus.
- When donuts from the 4 CCDs above are the same size as the 4 from below, the observation CCDs are in focus.
- Telescope can be adjusted to micron precision to make the “focus donuts” the same size and thus focus the Observation CCDs

DECam Subsystem Status

- ✓ Focus Loop
- ✓ DECal Integration
- ✓ Seeing and Image Health
- ✓ Guiding
- ✗ Pointing/tracking (new telescope control still being commissioned)
- ✓ RASICAM (Radiometric All Sky Infrared Camera): monitor cloud cover

Clusters in the Early Days



DECAM r,i,z 2100s

SDSS r,i,z 2700s

Next Time:
Science Verification!

